

Page #s for
the information in the Vertebrate Brochure.

Vertebrates Page 657

Chordates Page 767

Fishes Page 771

Agnathans(Jawless fish) Page 778

Chondrichthyes(sharks and rays) Page 779

Osteichthyes(bony fish) Page 780

Birds Page 806

Amphibians Page 782

Reptiles Page 797

Vertebrates are

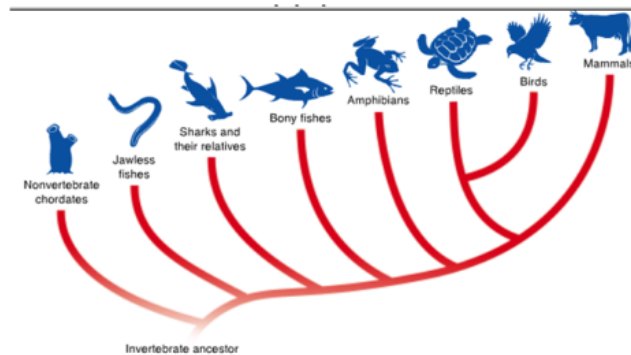
Animals with backbones or vertebral columns.

Vertebrates include the overwhelming majority of the phylum chordate, with currently about 58,000 species described. Vertebrates include the jawless fish and more. Existing vertebrates range in size from frog at as little as 7.7 mm to the blue whale at 33m (110ft). Vertebrates make up about 5% of all animals.

Chordate

What are they-

- An animal that has, for at least some stage of its life, a dorsal hollow nerve cord; a notochord; pharyngeal pouches; and a tail that extends beyond the anus
- All go through sexual reproduction



Fish

- What are they- Aquatic vertebrates; most fish have paired fins, scales and gills. Ectotherms (rely on behavior to help control body temperature). Largest group of chordates
- Bilateral symmetry
- Feeding- all modes
- Circulation- 2 chambered heart, closed circulatory system with a heart that pumps blood around the body in a single loop
- Three groups: Jawless fish, sharks, Bony fish

Agnathans

- Characteristics- jawless fish that have no true teeth or jaw. Lack vertebrae and instead keep their notochord as adults
- Ex: lampreys and hag fish



Chondrichthyes

- Characteristics- fish with skeletons that are build entirely of cartilage, not bone
- Example- sharks, rays, skates, and sawfish



Osteichthyes

- Characteristics- boney fish whose skeletons are made of hard calcified tissue called bone
- Example: perch, bass, trout, salmon, tuna, most fish



Amphibians



- What are they- a vertebrate that, with some exceptions, lives in water as a larva and on land as an adult, breathes with lungs as an adult, has moist skin that contains mucus glands, and lacks scales and claws Ectotherms (rely on behavior to help control body temperature)
- Bilateral symmetry
- Feeding- larva (herbivore or filter feeder) adult (carnivorous)
- Circulatory- Double loop system, 3 chambered heart, two atrium and one ventricle
- Example: salamander, frogs, caecilians (no legs)

Reptiles



- What are they- a vertebrate that has dry, scaly skin, lungs, and terrestrial eggs with several membranes. Ectotherms (rely on behavior to help control body temperature)
- Bilateral symmetry
- Feeding- Reptiles can be Carnivores, omnivores, and herbivores
- Circulation- efficient double loop circulatory system. Most have 3 chambered heart (one ventricle and two atria); Alligators have 4 chambers (two ventricles and two atria)



Birds



- What are they- are reptilelike animals that maintain a constant internal body temperature (endotherms). They have an outer covering of feathers; two legs that are covered with scales and used for walking or perching; and front limbs modified into wings.
- Bilateral symmetry
- Feeding- carnivorous, herbivore, omnivore
- Circulation- 4 chambered heart and two separate circulatory loops. Two ventricles and two atria . Closed system
- Example- pelicans, parrots, birds of prey, herons, and ostriches